Name: _____ Class: _____

Expressions and Quantities Day Two: Factoring

Questions 1

David correctly factored the expression $m^2 - 12m - 64$.
Which expression did he write?

(1) $(m - 8)(m - 8)$
(2) $(m - 8)(m + 8)$
(3) $(m - 16)(m + 4)$
(4) $(m + 16)(m - 4)$

Question 2

The expression $4x^2 - 25$ is equivalent to

(1) $(4x - 5)(x + 5)$
(2) $(4x + 5)(x - 5)$
(3) $(2x + 5)(2x - 5)$
(4) $(2x - 5)(2x - 5)$

Question 3

Four expressions are shown below.

I $2(2x^2 - 2x - 60)$
II $4(x^2 - x - 30)$
III $4(x + 6)(x - 5)$
IV $4x(x - 1) - 120$

The expression $4x^2 - 4x - 120$ is equivalent to

1) I and II, only
2) II and IV, only
3) I, II, and IV
4) II, III, and IV

Question 4

Janice is asked to solve $0 = 64x^2 + 16x - 3$. She begins the problem by writing the following steps:

Line 1 $0 = 64x^2 + 16x - 3$
Line 2 $0 = B^2 + 2B - 3$
Line 3 $0 = (B + 3)(B - 1)$

Use Janice's procedure to solve the equation for x.

Explain the method Janice used to solve the quadratic equation.

Questions 5-8

5.

When factored completely, $x^3 - 13x^2 - 30x$ is

1) $x(x+3)(x-10)$
2) $x(x-3)(x-10)$
3) $x(x+2)(x-15)$
4) $x(x-2)(x+15)$

6.

Factored completely, the expression $6x - x^3 - x^2$ is equivalent to

1) $x(x+3)(x-2)$
2) $x(x-3)(x+2)$
3) $-x(x-3)(x+2)$
4) $-x(x+3)(x-2)$

7.

Which expression is equivalent to $x^4 - 12x^2 + 36$?

1) $(x^2-6)(x^2-6)$
2) $(x^2+6)(x^2+6)$
3) $(6-x^2)(6+x^2)$
4) $(x^2+6)(x^2-6)$

8.

Factor completely: $x^3 - x^2 - 6x$

Questions 9-10

9.

If Ann correctly factors an expression that is the difference of two perfect squares, her factors could be

1) $(2x+y)(x-2y)$
2) $(2x+3y)(2x-3y)$
3) $(x-4)(x-4)$
4) $(2y-5)(y-5)$

10.

If the area of a rectangle is expressed as $x^4 - 9y^2$, then the product of the length and the width of the rectangle could be expressed as

1) $(x-3y)(x+3y)$
2) $(x^2-3y)(x^2+3y)$
3) $(x^2-3y)(x^2-3y)$
4) $(x^4+y)(x-9y)$

Question 11

The trinomial $x^2 - 14x + 49$ can be expressed as

(1) $(x-7)^2$
(2) $(x+7)^2$
(3) $(x-7)(x+7)$
(4) $(x-7)(x+2)$

Question 12

Factor completely: $3ax^2 - 27a$

Questions 13-14

13.

What is a common factor of $x^2 - 9$ and $x^2 - 5x + 6$?

1) $x+3$
2) $x-3$
3) $x-2$
4) x^2

14.

Factor: $9x^2 - \frac{4}{9}$

Question 15 (Systems Review)

The graphs of $y = x^2 - 3$ and $y = 3x - 4$ intersect at approximately

(1) (0.38, −2.85), only

(2) (2.62, 3.85), only

(3) (0.38, −2.85) and (2.62, 3.85)

(4) (0.38, −2.85) and (3.85, 2.62)

Question 16 (Systems Review)

A system of equations is shown below.

Equation A: $5x + 9y = 12$
Equation B: $4x - 3y = 8$

Which method eliminates one of the variables?

(1) Multiply equation A by $-\frac{1}{3}$ and add the result to equation B.

(2) Multiply equation B by 3 and add the result to equation A.

(3) Multiply equation A by 2 and equation B by −6 and add the results together.

(4) Multiply equation B by 5 and equation A by 4 and add the results together.

Question 17 (Systems Review)

First consider the system of equations $y = -\frac{1}{2}x + 1$ and $y = x - 5$.

Then consider the system of inequalities $y > -\frac{1}{2}x + 1$ and $y < x - 5$.

When comparing the number of solutions in each of these systems, which statement is true?

(1) Both systems have an infinite number of solutions.

(2) The system of equations has more solutions.

(3) The system of inequalities has more solutions.

(4) Both systems have only one solution.

Question 18 (Equation Review)

What are the solutions to the equation $3(x - 4)^2 = 27$?

(1) 1 and 7

(2) −1 and −7

(3) $4 \pm \sqrt{24}$

(4) $-4 \pm \sqrt{24}$